UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,225	04/01/2004	Johnson Yen	58268.00373	5371

32294   7590   04/17/2008
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EXAMINER
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ART UNIT	PAPER NUMBER
2619	

MAIL DATE	DELIVERY MODE
04/17/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2008*.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,7 and 11-18* is/are pending in the application.
      4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-3,5,7 and 11-18* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *10 January 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
      Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
      Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
      a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
      * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
      Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
      Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Drawings

1.   Replacement drawings were received on 1/10/08. These drawings are

acceptable and have been entered.

Claim Objections

2.   Claims **2, 3, and 15** are objected to because of the following informalities:

Regarding claims **2 and 3**, on line 1 of each of these claims, the phrase "the

network switch of claim **1**" should be "the apparatus of claim **1**" in order to correspond to

amended claim **1**.

Regarding claim **15**, on line 16, the word "hit" should be "match" in order to

correspond to the other amendment made on line 19.

Amendments made by Applicant to claims **1, 8, 9, 11, 15, and 17** to obviate the

claim objections presented in the previous Office Action are proper and have been

entered. These particular objections have been withdrawn.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claims **1-3, 5, 7, and 15-18** are rejected under 35 U.S.C. 112, first paragraph, as

failing to comply with the enablement requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to enable one skilled in

the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Specifically, there is not clear support for each "means plus function" element in the specification in view of 35 U.S.C. 112 6th paragraph. It is seen in Figure 1 and the disclosure, how the switch 102 appears to perform the functions recited in claims **15-18**. However, there is not clear support in the disclosure or the drawings of a structure comprising the claimed "means plus function" elements. Therefore, it is held that one of ordinary skill in the art would not know how to make and/or use the invention claimed in claims **15-18**.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7.   Claims **1-3, 5, 7, and 11-18** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Applicant's Admitted Prior Art on pages 1-3 of the specification

(hereinafter "AAPA") in view of Ullum et al. (U.S. 6,266,705) (hereinafter "Ullum") cited

in Applicant's submitted IDS.

Regarding claim **11**, *AAPA* teaches where an incoming frame's MAC destination

address and the VID are hashed (converted) by a switch to a 12-bit ARL address which

is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

AAPA further teaches the switch that compares the VID and MAC address in the

ARL table with the incoming frame's VID and MAC destination address, and if they are

the same, determines an ARL hit occurred, and the action code in the ARL table is then

used to determine which egress port(s) to send the incoming frame to as spoken of on

pages 2-3, paragraph 4, lines 5-10.

AAPA further teaches that if there is a match in the VLAN table, the switch uses

the forward map in the VLAN table to forward the incoming frame to the appropriate

destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

AAPA does not teach "using the less significant bits of the VID of the incoming

frame to access an appropriate entry in a VLAN table" and "comparing a VLAN VID

from the VLAN table with more significant bits of the VID of the incoming frame".

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure

3 contains entries having MAC/VLAN designation pairs (VID) that may be located in

either LSB or MSB locations in accordance with the particular hash key used as spoken

of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **12**, *AAPA* further teaches that if there is an ARL hit and the ports indicated by the action code in the ARL table are also active in the forward map, then the switch (forwarding means) forwards the incoming frame to the identified egress port(s) as spoken of on page 3, paragraph 4, lines 13-15.

Regarding claim **13**, *AAPA* further teaches that if there is not a hit in the ARL table, but there is a match in the VLAN table, the switch (forwarding means) uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

Regarding claim **14**, *AAPA* further teaches that if there is not a match in either the VLAN or ARL tables, that the switch (forwarding means) drops the frame as spoken of on page 3, paragraph 4, lines 18-19.

Regarding claim **15**, *AAPA* teaches the switch 102 (apparatus) of Figure 1.

AAPA further teaches where an incoming frame's MAC destination address and the VID are hashed (converted) by a switch (converting means) to a 12-bit ARL address which is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

AAPA further teaches the switch (comparing means, means for using) that compares the VID and MAC address in the ARL table with the incoming frame's VID and MAC destination address, and if they are the same, determines an ARL hit

occurred, and the action code in the ARL table is then used to determine which egress

port(s) to send the incoming frame to as spoken of on pages 2-3, paragraph 4, lines 5-

10.

AAPA further teaches that if there is a match in the VLAN table, the switch uses

the forward map in the VLAN table to forward the incoming frame to the appropriate

destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

AAPA further teaches an Ethernet switch (switch) that uses an Address

Resolution Table as well as a VLAN table on page 2, paragraph 3, lines 1-3 of the

specification.

AAPA also teaches each entry of the ARL storing a VLAN ID (ARL VID), a MAC

address, and an action code as spoken of on page 2, paragraph 3, lines 4-6.

AAPA also teaches each entry of the VLAN table storing a VLAN forward map

and a VLAN un-tag map as spoken of on page 2, paragraph 3, lines 8-10.

AAPA does not teach "means for using the less significant bits of the VID of the

incoming frame to access an appropriate entry in a VLAN table" and "comparing means

for comparing a VLAN VID from the VLAN table with more significant bits of the VID of

the incoming frame".

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure

3 contains entries having MAC/VLAN designation pairs (VID) that may be located in

either LSB or MSB locations in accordance with the particular hash key used as spoken

of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **2**, *AAPA* further teaches the use of an action code by a switch to determine which port(s) to send the frame to as spoken of on page 2, paragraph 3, lines 5-7.

Regarding claim **3**, *AAPA* further teaches each entry of the VLAN table storing a VLAN forward map and a VLAN un-tag map as spoken of on page 2, paragraph 3, lines 8-10.

Regarding claim **5**, *AAPA* further teaches where an incoming frame's MAC destination address and the VID are hashed by a switch (converting means) to a 12-bit ARL address which is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

Regarding claim **7**, *AAPA* further teaches where the switch (accessing means) uses the VID of the incoming frame to access the VLAN table to read the forward map and un-tag map from the associated VLAN entry as spoken of on page 3, paragraph 4, lines 10-13.

AAPA does not teach where the VLAN table comprises a VLAN identifier (VLAN ID) in more significant bits.

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure 3 contains entries having MAC/VLAN designation pairs that may be located in either

LSB or MSB locations in accordance with the particular hash key used as spoken of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **16**, *AAPA* further teaches that if there is an ARL hit and the ports indicated by the action code in the ARL table are also active in the forward map, then the switch (forwarding means) forwards the incoming frame to the identified egress port(s) as spoken of on page 3, paragraph 4, lines 13-15.

Regarding claim **17**, *AAPA* further teaches that if there is not a hit in the ARL table, but there is a match in the VLAN table, the switch (forwarding means) uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

Regarding claim **18**, *AAPA* further teaches that if there is not a match in either the VLAN or ARL tables, that the switch (dropping means) drops the frame as spoken of on page 3, paragraph 4, lines 18-19.

Response to Arguments

8.   Applicant's arguments filed 1/10/08 have been fully considered but they are not persuasive.

Regarding claims **15-18**, Applicant argues that Figure 1 provides support for the claimed "means-plus-function" features of these claims.

Applicant further argues that although Figure 1 does not explicitly show the corresponding "means-plus-function" features of these claims, that one of ordinary skill in the art would be able to recognize from the disclosure of Figures 1 and 3, that the switch of Figure 1 would include various structural elements for performing the various described functionalities.

However, it is not understood how one of ordinary skill in the art would be able to identify what structural elements are included in the claimed switch when there is no further disclosure of the claimed "means-plus-function" elements in the Figures or the specification, other than that the switch performs the claimed operations. It is held that in view of the current disclosure, that one of ordinary skill in the art would not know how to make and/or use the invention of these claims.

Further, Applicant argues that claims **15-18** were not properly rejected under 35 U.S.C. 112, 1st paragraph, because the specification alone should have been rejected.

However, it is held that the originally filed claims are considered to be part of the specification.

Referring to the MPEP:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

From the above citation, it is seen how the originally filed claims are considered part of the specification. Therefore, a rejection of the claims under 35 U.S.C. 112, 1st paragraph is considered a rejection of the specification. Therefore, it is held that the rejection presented in the Office Action is proper.

Regarding claims **11 and 15**, Applicant argues that *Ullum* does not teach providing a comparison of the VLAN ID from a VLAN table with more significant bits of the VID of the incoming frame to determine whether a VLAN match exists between the VLAN ID and the more significant bits as recited in claims **11 and 15**.

However, as provided in the previous Office Action, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure 3 contains entries having MAC/VLAN designation pairs that may be located in either LSB or MSB locations in accordance with the particular hash key used as spoken of on column 7, lines 21-40.

Ullum goes on to state how a different set of bits other than the most significant bits (MSBs) may be used to determine the virtual page assignment of a particular MAC/VLAN designation pair in the data RAM 340.

Ullum also states how a comparator 356 is used to compare a particular MAC/VLAN pair entry retrieved from the data RAM 340 (retrieved using the hash key 458) with the incoming MAC/VLAN address information of a data frame to detect a match as spoken of on column 6, lines 59-67.

From these teachings, *Ullum* shows how either MSBs or LSBs of a MAC/VLAN pair may be utilized in a comparison operation of VLAN IDs.

It is therefore held that at the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL J. MOORE, JR., whose telephone number is (571)272-3168. The examiner can normally be reached on Monday-Friday (7:30am - 4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing F. Chan can be reached at (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wing F. Chan/   /M. J. M./
Supervisory Patent Examiner, Art Unit 2619   Examiner, Art Unit 2619
4/14/08